As of February 26, 2015

Q8:   Can any additional information be provided regarding the apparatus that will be made available at the start of the Communicating with Computers program?

A8:   The apparatus provided by DARPA for the Blocks World use case will consist of a reasonably sized table instrumented with one or more Kinect sensors which will be used to track 15-20 uniquely identifiable cuboid blocks as well as a single human interacting with the "machine". The table will also house a TV screen or monitor at one end on which a simple cartoonish embodiment of the "machine" will be rendered. This will define the location and viewpoint of the "machine" to allow for communication where the semantics is colored by a perceiver's viewpoint. The screen may also be used for displaying any communication from the machine to the human, e.g., speech acts (textual) or non-verbal communication (gaze, facial expressions, etc.)

The system will provide a number of APIs, some of which have been described in the BAA, for accessing reasonably accurate information about the state of the blocks world as well as the human. The state of the blocks will be updated and reported as snapshots in time when the individual blocks' states each reach a stable state, i.e., after all motions or manipulations of the blocks have ceased. This will be reported both in terms of absolute coordinates and orientations of the blocks (the omniscient point of view) as well as perceptual maps from the viewpoints of the human and the "machine".

The communication from the human will be sensed and reported in synchronous streams for continuous signals like body pose, head pose and gaze directions and as asynchronous events for discrete signals like recognized gestures, and speech acts. A keyboard interface will also be provided to allow for directly inputting text based communication directed towards the machine.

The physical manipulation of the blocks from the machine's side can either be done via a human proxy who is expected to be someone other than the human involved in the interaction with the machine or using a robotic arm (not provided). Block manipulations will be described in the same snapshot like language used to describe the Blocks World, i.e., define the goal state of a particular block resulting from the manipulation. Since such a representation will not be ideal for a human proxy to enact accurately, it is expected that such manipulation acts defined by the "machine" will be translated and presented visually to the human proxy.

Additional APIs, not mentioned in the BAA, will also be provided with the apparatus. First, a playback and review API will be provided that will give access to recorded game sessions. This will allow performers to review their sessions in great detail and may

prove useful to TA5 performers when performing evaluations. A second API provided will allow streaming access to all raw data captured by the system (video, depth, audio, etc.).

Q7: Must a TA1 proposer propose to address all three use case? Or will there be one TA1 performer per use case?

A7: Proposers to the TA1 area are welcome to propose to all three use cases but it is not necessary. There will only be one TA1 performer per use case.

Q6: What is the phasing of the use cases? Will there be all three use cases throughout the program?

A6: We can easily imagine all of the use cases continuing throughout the program. Each use case will start as soon as there are performers ready to begin work, and each will continue for as long as it is useful.

Q5: In proposing a project on CWC's TA2 and/or TA3, is it necessary to focus on all three use cases?

A5: There are multiple alternatives for working on use cases, from focusing on one, two or three of them. It is up to the proposer to decide how to focus their efforts. As noted in the BAA, proposers are reminded not to overreach.

As of February 24, 2015

Q4: If DARPA will not release resources from maturing Big Mechanism technologies for awardees in the Communicating with Computers Program, is there any alternative to including a Big Mechanism participant in proposals for Communicating with Computers?

A4: There are multiple alternatives from teaming with a Big Mechanism performer to choosing not to propose work on the Biocuration use case. It is up to the proposer to decide how to address the issue.

Q3: If DARPA releases resources from maturing Big Mechanism technologies for awardees in the Communicating with Computers Program, what resources will be released?

A3: DARPA would facilitate access to Big Mechanism models and the ideas (hypotheses; questions; clarifications; etc.) produced by one or more Big Mechanism system regarding those models. The CwC performer would be responsible for creating a communication channel from the human biocurator to the Big Mechanism system. Proposers might find it helpful to look at BioPAX/Pathway Commons models, which are one of the kinds of models being developed in Big Mechanism.

Q2: Will DARPA release resources from maturing Big Mechanism technologies for awardees in the Communicating with Computers Program?

A2: As needed.

Q1: Is the CwC program interested in the neurobiology of human-machine communication? Would it be within the scope of the program to understand the neurologic mechanisms that motivate people to interact with machines?

A1: The program has a more cognitive than neurological focus. TA2 and TA3 are about the construction and transmission of ideas. TA4 is about realizing the communication and includes functions that have been called discourse, dialog planning, pragmatics...That said, the question of what drives communication is certainly interesting and important. Keep in mind, though, that the CwC program seeks technology, so neurological accounts of aspects of communication that cannot readily translate to technology are less valuable than those that can.